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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
|-----------------|-------------|----------------------|---------------------|------------------|

10/611,377

06/30/2003

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07/01/2009

INTEL/BSTZ

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EXAMINER

FAHERTY, COREY S

ART UNIT

PAPER NUMBER

2183

MAIL DATE

DELIVERY MODE

07/01/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|--------------------------------------|--|--|
| Office Action Summary | Application No. 10/611,377 | Applicant(s) LIPPINCOTT ET AL. | |
| | Examiner Corey S. Faherty | Art Unit 2183 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 April 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 and 11-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 and 11-29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This office action is in response to the appeal brief filed on 04/20/2009.
2. The arguments presented in the appeal brief were found to be persuasive. New rejections are presented herein, and this action is made non-final so that applicant has an opportunity to respond to those rejections.
3. Claims 1-9 and 11-29 are pending in the application and have been examined.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-7, 9, 11-16 and 27-29 are rejected under 35 U.S.C. 102(b) as being anticipated by Gove (U.S. Patent 5,613,146).
6. Regarding claims 1 and 27, Gove discloses a data driven processing method, comprising: providing a first set of instructions and incoming data to a first processing unit, of a data driven processor, to operate upon said incoming data [col. 34, lines 61-67]; configuring a data path for transferring data between a second processing unit of the data driven processor and external memory [col. 13, lines 25-42]; and the first processing unit, in response to recognizing that the first set of instructions will require one of reading from and writing to external memory, provides addressing information to a memory access unit of the processor to enable the transfer of

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additional data between the external memory and the second processing unit via said data path [col. 13, lines 25-42; col. 58, lines 36-42].

7. Regarding claim 2, Gove discloses the method of claim 1 wherein the first processing unit recognizes an image processing motion vector in said first set of instructions, and said additional data is to be written to the external memory and includes a macro block generated by the second processing unit based on the motion vector [col. 13, lines 25-42; col. 58, lines 20-29; col. 14, lines 55-58].

8. Regarding claim 3, Gove discloses the method of claim 1 wherein the data path is configured by an external host controller [Fig. 52 and accompanying description; OR col. 13, lines 25-42].

9. Regarding claim 4, Gove discloses the method of claim 1 further comprising: the first processing unit providing an indication to the memory access unit of whether the transfer is one of a read and a write [col. 58, lines 36-42].

10. Regarding claim 5, Gove discloses a data processor comprising: a first direct memory access (DMA) unit [col. 13, lines 1-10]; and a plurality of processing units each having a plurality of data ports, the data ports being coupled to each other and programmable to allow data flow from any one of the processing units to another and from any one of the processing units to the DMA unit [col. 13, lines 25-42; col. 58, lines 16-29], the plurality of processing units are essentially identical units each having a plurality of sides, each side having a plurality of unidirectional data ports being an input port and an output port wherein the input port is programmable to route incoming data to any one of the output ports [col. 54, line 60 - col. 55, line 13], wherein one of the processing units has a control port from which it is to send

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information to the DMA unit about setting up a DMA channel through which one of data to be consumed and result data by one of the processing units is transferred [col. 13, lines 25-42].

11. Regarding claim 6, Gove discloses the processor of claim 5 further comprising: memory interface circuitry, wherein the DMA unit is to access external memory via the memory interface circuitry [col. 58, lines 20-29].

12. Regarding claim 7, Gove discloses the processor of claim 6 further comprising a host interface through which a host processor is to configure data flow between the data ports [Fig. 52 and accompanying description; OR col. 13, lines 25-42], wherein the memory interface circuitry is on-chip with the DMA unit, the plurality of processing units, and the host interface [abstract].

13. Regarding claim 9, Gove discloses the processor of claim 5 wherein each of the processing units has an input programming element (PE) to read incoming data from any one of its input ports [Fig. 30 and accompanying description], an output PE to write result data to any one of its output ports [Fig. 30 and accompanying description], and a core PE to execute instructions independently of a data path that is operating through a pair of the input and output ports of that processing unit [Fig. 30 and accompanying description].

14. Regarding claim 11, Gove discloses the processor of claim 6 wherein each of the plurality of processing units has a plurality of control ports on each side including an input control port and an output control port, and wherein the input control port of a processing unit is programmable to route incoming command information to any one of the output control ports of said processing unit [Fig. 30 and accompanying description].

15. Regarding claim 12, Gove discloses the processor of claim 9 further comprising an interface to an external device, and wherein the output ports of one of said processing units are

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coupled to the input ports of an adjacent one of said processing units except that some of the output ports of an outlying one of said processing units are coupled to the external device interface [Fig. 17].

16. Regarding claim 13, Gove discloses the processor of claim 5 further comprising: a second DMA unit [Fig. 17, master processor], wherein there are at least four of said plurality of processing units, the data ports on a north side of first and second ones of said four processing units are coupled to the first DMA unit, the data ports on a south side of third and fourth ones of said four processing units are coupled to the second DMA unit, and the data ports of a south side of the first and second processing units are coupled to the data ports of a north side of the third and fourth processing units [Fig. 17].

17. Regarding claim 14, Gove discloses the processor of claim 13 further comprising an interface to an external device, wherein some of the data ports of east and west sides of the processing units are coupled to the external device interface [Fig. 17].

18. Regarding claim 15, Gove discloses the processor of claim 5 further comprising a central processing unit to read and execute instructions that configure the data ports and the DMA unit to create a data channel from one of the processing units to external memory [col. 13, lines 25-42].

19. Regarding claim 16, Gove discloses the processor of claim 5 further comprising a host interface unit to receive instructions, from an external host controller, that configure the data ports and the DMA unit to create a data path from one of the processing units to external memory [Fig. 52 and accompanying description; OR col. 13, lines 25-42].

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20. Regarding claim 28, Gove discloses the processor of claim 27 further comprising means for ensuring that said lower level memory accesses meet signal level and timing requirements of external memory [Fig. 20 and accompanying description].

21. Regarding claim 29, Gove discloses the processor of claim 27 further comprising means for expanding the data processor [Fig. 4].

Claim Rejections - 35 USC § 103

22. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

23. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

24. Claims 8 and 17-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gove.

25. Regarding claim 8, Gove does not explicitly disclose that the external memory is dynamic random access memory. However, the benefits of DRAM are well known in the art (structural simplicity, high density) and its use as external memory in the system of Gove would therefore have been obvious.

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26. Regarding claims 17 and 23, Gove discloses a system comprising: a host controller [Fig. 17]; external memory [Fig. 17]; a data driven processor having a memory access unit to interface the external memory [Fig. 17], a plurality of processing units each having a plurality of data ports [Fig. 17; Fig. 30], the data ports being coupled to each other and programmable to allow data flow from any one of the processing units to another and from any one of the processing units to the memory access unit [Fig. 17; Fig. 30; col. 58, lines 16-42], and a host interface unit to receive instructions from the external host controller that configure the data ports and the memory unit to create a data path from one of the processing units through a data channel to the external memory [col. 13, lines 25-42; col. 34, lines 61-67], wherein one of the processing units has a control port which it uses to write data location information to the memory access unit [col. 58, lines 36-42]. Gove does not explicitly disclose one of a rechargeable battery and a fuel cell coupled to power the external memory, the host controller, and the data driven processor.

However, the benefits of using rechargeable battery technology (portability) are well known in the art and the use of such technology in the system of Gove would therefore have been obvious.

27. Regarding claim 18, Gove discloses the system of claim 17 wherein the host controller includes an embedded processor and its associated main memory [Fig. 17; Fig. 29].

28. Regarding claims 19 and 25, Gove does not explicitly disclose that the couple of each pair of data ports from adjacent processing units is a point-to-point unidirectional connection. However, the use and benefits of point-to-point connections in array processing systems are well known in the art and such use would therefore have been obvious in the system of Gove.

29. Regarding claim 20, Gove discloses the system of claim 19 wherein each of the processing units has a core programming element (PE) that can be programmed to execute

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instructions that operate on incoming data received via an input data port of that processing unit [Fig. 30], an input PE that can read data from any one of a plurality of input data ports of that processing unit [Fig. 30; Fig. 17], and an output PE that can write data to any one of a plurality of output data ports of that processing unit [Fig. 30; Fig. 17].

30. Regarding claim 21, Gove discloses the system of claim 20 wherein the core PE of each processing unit can execute its instructions independently of a data path that is operating through a pair of said input and output data ports of that processing unit [Fig. 17, 29, 30 and accompanying descriptions].

31. Regarding claim 22, Gove discloses the system of claim 17 wherein the data location information that is sent through the control port includes information about the size and display location of a block of image data [col. 58, lines 36-42].

32. Regarding claims 24 and 26, Gove discloses the system of claim 23 wherein each of the processing units has a plurality of control ports that are connected to each other in a mesh arrangement [Fig. 17; Fig. 30] so that the data channel information, including one of a read and write command, address, and memory access unit channel identifier, can originate from any one of the processing units and be routed to the memory access unit via a logical control channel programmed in the mesh arrangement [col. 58, lines 16-42].

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Corey S. Faherty whose telephone number is (571) 270-1319. The examiner can normally be reached on Monday-Thursday and every other Friday, 7:00-4:30.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Chan can be reached on (571) 272-4162. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Eddie P Chan/
Supervisory Patent Examiner, Art Unit 2183

/Corey S Faherty/
Examiner, Art Unit 2183